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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Peter Georg Baum

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EXAMINER

DSOUZA, JOSEPH FRANCIS A

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/582,031	Applicant(s) BAUM ET AL.	
	Examiner ADOLF DSOUZA	Art Unit 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 July 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 - 10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Response to Arguments

1. Corrections to the abstract have been accepted by the Examiner
2. Applicant's amendment to the claims to overcome 35 USC 101 rejections has been accepted by the Examiner.
3. Applicant's arguments filed 7/9/2009 have been fully considered but they are not persuasive.

Argument: Applicant argued that Kudumakis does not disclose "in the frame following said following frame, no watermark signal carrier is transmitted in the frequency band or bands which have been occupied in said current frame, in order to decrease watermark data bit errors caused by echoes following reception of said audio signal" (Remarks 7/9/2009, page 11, last 5 lines and same arguments on pages 11 – 13).

Response: Examiner respectfully disagrees. In Applicant's invention the frequency band in the following frame is different from the frequency band of the current frame. Though Kudumakis doesn't explicitly make a similar statement it can be inferred from the Kudumakis' method. For example (1) in the Abstract (last 7 lines), Kudumakis states that the frequency range eliminated is varied. (2) In claim 2, Kudumakis states that the frequency range eliminated is offset by a given amount, the given amount having a random or pseudo-random nature ... (3) In [0025], lines 7 – 9, Kudumakis states that "some randomness is added to the selection of the notch frequencies". This is also shown in Figs. 3a, 3b where a random number generator is added to change the notch frequency selected. Therefore, Examiner contends that the frequency band in the following frame will be different from the frequency band in current frame.

For the above reason, Examiner is maintaining his rejection as in the last Office Action.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 2, 5, 6, 9, 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kudumakis et al. (US 20030169804) in view of Preuss et al. (US 5319735).

Regarding claim 1, Kudumakis discloses a method for transmitting watermark data bits ([0002], [0012]), said method including the steps:

modulating said watermark data bits on an encoder pseudo-noise sequence ([0031], last few lines; Fig. 3a random number generator);

modulating said modulated encoder pseudo-noise sequence on a carrier frequency ([0031], last few lines; wherein modulation implies using a carrier frequency);

determining whether at one or more different candidate frequency band positions in a current frame of said audio signal the energy or amplitude level of said audio signal is

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such that it can mask one or more, respectively, of said modulated carrier frequencies and, if this is true, notch filtering said audio signal at the corresponding frequency band positions and inserting at this frequency or at each of these frequencies, respectively, said carrier frequency or one of said carrier frequencies, respectively ([0021]);

checking at which candidate frequency band positions in a frame following said current frame of said audio signal the energy or amplitude level of said audio signal is such that it can mask one or more, respectively, of said modulated carrier frequencies, and providing information about the locations of these frequency band positions ([0014], [0021], [0031]);

transmitting or transferring data of said current audio signal frame carrying said watermark data bits together with the information about the locations of the frequency band positions to be used in said frame following said current frame of said audio signal, wherein, in the frame following said following frame, no watermark signal carrier is transmitted in the frequency band or bands which have been occupied in said current frame, in order to decrease watermark data bit errors caused by echoes following reception of said audio signal ([0014], [0021], [0031]); claim 5).

Kudumakis does not disclose the modulation is spread spectrum modulation.

In the same field of endeavor, Dent discloses spread spectrum modulation (Fig. 1; column 3, lines 15 – 30).

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Therefore it would be obvious to one of ordinary skill in the art, at the time the invention was made, to use the spread spectrum modulator, as taught by Dent, in the system of Kudumakis because this would enable the rejection of interference, as is well known in the art.

Claim 2 recites similar limitations to claim 1, just worded differently, and therefore is similarly analyzed as claim 1.

Claims 5 - 6 are directed to apparatus of the same subject matter claimed in method/steps claims 1 - 2 respectively and therefore, are rejected as explained in the rejections of claims 1 - 2 above.

Regarding claim 9, Kudumakis discloses one of an energy level and an amplitude level of one of said modulated carrier frequency or and one of said modulated carrier frequencies is made such that it is masked by the energy or amplitude level of said audio signal at the corresponding frequency or frequencies, respectively ([0002]; [0021]).

Claim 10 is directed to apparatus of the same subject matter claimed in method/steps claim 9 and therefore, is rejected as explained in the rejection of claim 9 above.

6. Claims 3, 4, 7, 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kudumakis et al. (US 20030169804) in view of Preuss et al. (US 5319735) and further in view of LoboGuerrero (Iterative Informed Audio Data Hiding Scheme Using Optimal Filter; which has been provided by the Applicant in his IDS).

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Regarding claim 3, Kudumakis discloses a method for regaining watermark data bits, whereby the corresponding original watermark data bits were modulated at encoder side on an encoder pseudo-noise sequence and said modulated encoder pseudo-noise sequence was modulated on a carrier frequency ([0031], last few lines; Fig. 3a random number generator; wherein modulation implies using a carrier frequency) , and wherein at one or more different frequency band positions in a current frame of said audio signal the audio signal was notch filtered and one of said carrier frequencies was inserted instead, and wherein a current audio signal frame carrying ([0021]) said watermark data bits was transmitted or transferred together with information about the locations of the frequency band positions used for said carrier frequencies in a frame following said current frame of said audio signal, wherein, in the frame following said following frame, no watermark signal carrier was transmitted in the frequency band or bands which were occupied in said following frame ([0014], [0021], [0031]), in order to decrease watermark data bit errors caused by echoes following reception of said audio signal

receiving and synchronizing said transmitted or transferred audio signal (Fig. 1b, 3b, [0023]; [0031]; [0033]);

demodulating for a current audio signal frame said carrier frequency or said carrier frequencies, respectively, thereby using said information about the location or locations of the frequency band position or positions used for said carrier frequency or frequencies, respectively, which information was attached to the data for a previous frame of said audio signal ([0023]; [0031]; [0033]).

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Kudumakis does not disclose spread spectrum convolution and determining the sign.

In the same field of endeavor, Dent discloses spread spectrum modulation (Fig. 1; column 3, lines 15 – 30).

Therefore it would be obvious to one of ordinary skill in the art, at the time the invention was made, to use the spread spectrum modulator, as taught by Dent, in the system of Kudumakis because this would enable the rejection of interference, as is well known in the art.

In the same field of endeavor, LoboGuerrero discloses convolving said current frame of data of said audio signal with a time-inversed version of the encoder pseudo-noise sequence (page 1409, section 2) Optimal Detection); determining from the sign of the peak or the peaks of the corresponding convolution result the value of a bit of said watermark data (page 1409, Equation (4)).

Therefore it would be obvious to one of ordinary skill in the art, at the time the invention was made, to use the spread spectrum modulator, as taught by LoboGuerrero, in the system of Kudumakis because this would enable the optimal detection on the receiver side, as disclosed by LoboGuerrero.

Claim 4 recites similar limitations to claim 3, just worded differently, and therefore is similarly analyzed as claim 3.

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Claims 7 - 8 are directed to apparatus of the same subject matter claimed in method/steps claims 3 - 4 respectively and therefore, are rejected as explained in the rejections of claims 3- 4 above.

Other Prior Art Cited

7. The prior art made of record and not relied upon is considered pertinent to the applicant's disclosure.

The following patents are cited to further show the state of the art with respect to Rake receivers:

Rhoads (US 6,363,159) discloses consumer audio appliance responsive to watermark data.

Srinivasan (US 6,968,564) discloses multi-band spectral audio encoding.

Srinivasan (US 7,006,555) discloses spectral audio encoding.

Kirovski et al. (US 7,020,285) discloses stealthy audio watermarking

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

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mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact Information

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ADOLF DSOUZA whose telephone number is (571)272-1043. The examiner can normally be reached on Monday through Friday from 8:00 AM to 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, DAVID PAYNE can be reached on 571-272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

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USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Adolf DSouza
Examiner
Art Unit 2611

AD

/David C. Payne/

Supervisory Patent Examiner, Art Unit 2611